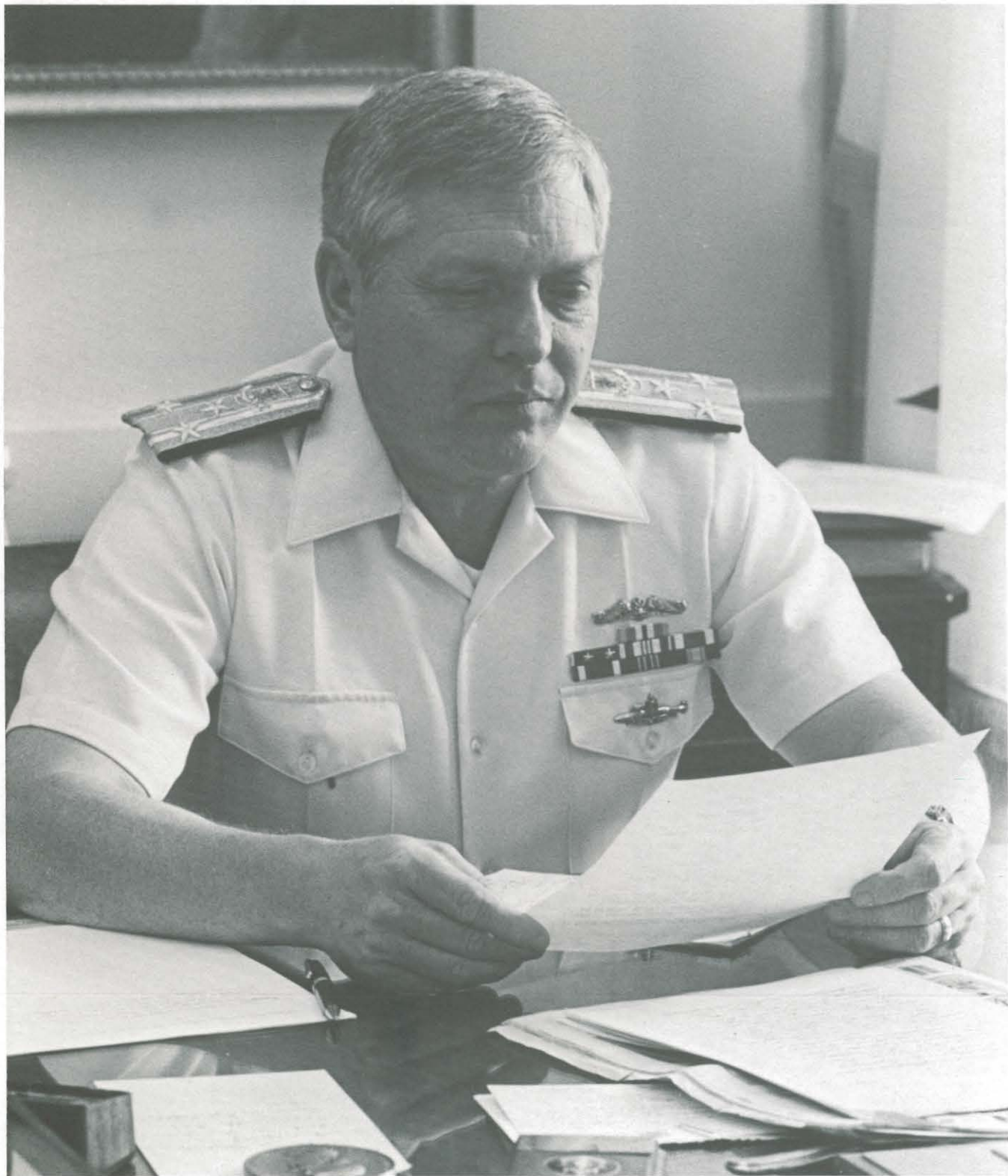


NAVY MEDICINE

September-October 1987



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COVER: In July VADM James A. Zimble, MC, assumed office as Surgeon General of the Navy and Director of Naval Medicine. In this issue Dr. Zimble sets his agenda for the Navy Medical Department, page 13. Photo by JOCS Russ Egnor, USNR-R.

Changing Times

In his lead article in this issue, the Surgeon General of the Navy speaks of new directions and the need to restore the Navy Medical Department to the state of preeminence which we enjoyed in the medical profession for many years. A broadened understanding by our Navy and Marine Corps family and by line leadership of both services of the resource problems which underly the majority of our current shortfalls in service is vitally important.

Each of us has the opportunity and the responsibility to educate our contemporaries in the line about what it takes to provide a fully capable medical organization for the wartime and peacetime needs of the service. It is as essential for line commanders to understand the organization and functioning of their medical capability as it is for them to understand logistics, intelligence, and other combat support functions in order that they may employ them fully and correctly.

Resources are the key to most of our problems, but we also know that competition for resources in today's budget environment is a fact of life. Our ability to justify, describe, and validate our needs is what will find for us the means to meet them. That is as it should be, and something that we should welcome, because our argument is such a compelling one.

The balance between wartime and peacetime needs is another area which we must more fully explain. A large segment of our beneficiary population has no basis on which to understand the range of things we must do to support combat capability and the resources we must have in order to do that. It comes back again to communication and to gaining the understanding of those with whom we deal.

Finally, there is another concept expressed in the Surgeon General's message with which we all certainly agree. We *will* prevail. Navy medicine not only *must* prevail for the good of the country and the Navy/Marine Corps team, but we will because the motivation, dedication, and capability to do so are there. There can be no "they" in this equation, only "we." We can make it happen, and the "we" includes the entire Navy and Marine Corps, and certainly the entire Medical Department.

RADM Joseph S. Cassells, MC



PHC John Kristofferson

Department Rounds

A *Mercy* Medley

In July, following a 4½-month cruise to the Western Pacific, USNS Mercy, the first Navy hospital ship since the Vietnam era, returned to its new homeport at Naval Supply Center, Oakland, CA. A good part of its training and humanitarian mission took place in the Philippines. Following are several reports from Mercy, all but one filed before the vessel sailed for home.

The sun gleams off the mammoth white ship, raising the deck temperature so high that a short walk burns through your shoes. Off the port side, a 33-foot utility boat pulls alongside and offloads its precious cargo—Philippine men, women, and children arriving for surgery. A scant 4 miles away, at an elementary school, thousands of people stand in long lines, awaiting outpatient treatment. More than 150 U.S. military medical and support personnel work side by side with local doctors and dentists to treat a range of diseases.

The ship is the Navy's newest hospital ship, USNS *Mercy* (T-AH 19), on her shakedown cruise to the Western and Southern Pacific. For 5 months the people aboard travel from port to port in the Philippines and to several small South Pacific islands, delivering medical care to thousands of needy patients. The mission, which began when *Mercy* left San Diego at the end of February, is for humanitarian as well as training reasons. The first hospital ship in the fleet since 1973, when USS *Sanctuary* was decommissioned, the newly converted ship had to be

"shaken down" and her crew familiarized with operating the modern hospital facilities in remote locations.

Mercy and her mission to the Philippines and South Pacific are unique in many ways. *Mercy* is a former crude-oil tanker that now weighs in at a whopping 69,000 tons. The 894-foot-long behemoth is larger than some of the smaller, older aircraft carriers in the fleet. The crew is a rare mixture—72 civilian contract Merchant Marine officers and seamen to operate the ship, 91 Air Force medical and support personnel, 98 Army personnel, three Public Health Service nurses, 65 medical people from the Armed Forces of the Philippines and 385 Navy personnel, including four small boat crews, a helicopter detachment, a dozen safety divers, nearly 100 supply personnel who also take care of cooking and doing laundry for the small city, and some of the finest medical practitioners in the world.

The Philippine portion of the mission takes the ship to seven ports and will provide medical care to better than 55,000 people. Treatment for acute diseases and minor surgery is

delivered ashore, usually at a local school or college, and Filipino doctors, dentists, nurses, and other volunteers from each location augment the joint U.S.-Philippine medical teams from the ship. Aboard *Mercy*, 5 of the 12 operating rooms are going at any given time, as surgeons perform major operations on 125 to 150 patients in each port. The outpatient clinics treat more people, but it is often the surgery patients crewmembers remember most.

There was Aida Balunso, a 15-year-old girl from the southern Luzon city of Legazpi. (See *Navy Medicine*, May-June 1987, pp 4-5) Aida lost her left eye when it became infected following an operation for cataracts. She was a shy little girl who rarely smiled when she came aboard the ship. But when she left 3 days later, with her new prosthetic eye, she was all smiles. "You've made me the happiest girl in the world," she told DT2 Eric Eclavea, a Filipino who joined the U.S. Navy and now specializes in oral and facial prosthetics.

Then there was "Mr. Bing," a 70-year-old man unable to see at all because of the cataracts on both eyes. His surgery a complete success, he cried when he was discharged, and hugged his favorite nurse, Army CAPT Elizabeth Stewart, who shed a few tears herself. More than 50 people have had sight restored by the ophthalmic surgeons aboard the ship during the cruise. Isabel, a 40-year-old with six children at home, was so grateful to the surgical staff that successfully removed her enlarged thyroid, she promised to write a song about them and the ship. Maria and Marretta Bonite, 6- and 8-year-old sisters who came for repair of cleft lips, were ecstatic to rejoin their parents at the pier, but 4-year-old Ernie had become so attached to the Air Force technician who worked nights on the pediatric ward, he didn't want to leave. Six-month-old Jennifer, who arrived in Davao suffering from dehydration and severe malnutrition, rapidly became the darling of the ward during her week-long stay. And several

youngsters, who had been burned by kerosene lanterns as toddlers, are now able to lift their heads, flex their hands, or walk upright after having their burn scars repaired.

"It's both a heartening experience and a frustrating one," says CAPT Robert Abbe, director of Surgical Services. "For every patient we're able to operate on, we have to turn 10 or 12 away. Either their illness is one we can't treat surgically, their overall health is too poor, or our surgery schedule is too full. It's the ones I have to say no to that break my heart."

The idea for the mission came from ADM James A. Lyons, Jr., Commander in Chief of the Pacific Fleet. Knowing that the new hospital ship was about to be readied for a shake-down cruise and that medical care was a top priority for Philippine President Corazon Aquino, Admiral Lyons pushed the idea in Washington. When President Aquino visited the United States last fall, President Reagan offered her the services of the ship during its maiden voyage. Two months later, she accepted and the *Mercy* mission was born.

CAPT Richard Hosey, master of the ship, is responsible for its safe and efficient operation. The ship, which has a 34-foot draft, is too large to pull into most of the Philippine ports, and must be anchored between $\frac{1}{2}$ and 5 miles out. A detachment from Helicopter Support Squadron Five in Guam transports supplies and staff from the ship to the shore clinic sites every day, and patients and staff are ferried by small boat. An ocean-going tug, USNS *Sioux*, accompanies the *Mercy* on her port visits to help anchor the ship and carry heavy medical equipment like dental chairs and field sinks.

CAPT (now RADM) Donald Sturtz, a surgeon, commands the hospital aboard *Mercy* and takes great pride in his crew. "We have touched the hearts of so many people here, and have done so much good for so many more, we will carry this experience with us forever," he says.

In many respects the mission has

been a difficult one. Most of the crew had never been to sea when *Mercy* left San Diego, and better than two-thirds were seasick during a 4-day storm on the transit. It took 18 days to cross the Pacific to Subic Bay, and boredom and anxiety were common maladies. Logistics have also been difficult to manage. Setting up clinics ashore is no easy chore. In many of the ports water is in short supply and is sometimes not potable. Power at the shore clinics is 220 volts and is usually too limited to support dental chairs, surgical lights, X-ray equipment, and other gear. So in addition to two water tanks, *Sioux* also carries portable generators for the clinics. And the tropical climate has taken its toll. On some of the hottest days, when temperatures climb over 100° F, medical personnel return to the ship and are given intravenous fluids to counter dehydration.

But the most difficult part is seeing patients you can't help. In Davao, the third stop for the ship, more than 30,000 people came to the shore clinic on Good Friday seeking medical care. The clinics, on their best days, can see a maximum of about 1,300 people. Because of the huge crowds, it was impossible to get patients into the school housing the clinic, so treatment was postponed until late in the day, when the number of people thinned out.

"Everywhere we go, we have more people coming in for help than we can possibly see, and that really takes a toll on our people," says Sturtz. "What keeps us going is the ones we do help. I go to the wards every day and see the people who've had surgery, just to keep some perspective," he says.

"The mission has been a wonderful experience so far," says Hosey. "It illustrates the best part of our national character—reaching out to help people who need it desperately. Seeing a person who had serious medical problems, and no way to solve them, walk off the ship with a changed life makes the long days worthwhile."

—LCDR Deborah Burnette, USN

* * *

Below: Donned with a facial dressing of cream to relieve the pain of burns suffered from spilled fuel, a child awaits transport to Mercy's intensive care unit. Right: Army SSGT Pedro Guerad lends comforting words to an accident victim.



PHC John Kristoffersen



PH2 Donna Walker

Mercy, in port at Zamboanga, Republic of the Philippines, put its emergency response training to the test when it took aboard six Filipino accident victims from Zamboanga City.

The accident occurred on Basilan Island when a truck overturned, killing 14 people and injuring 57. The victims were rushed to local hospitals; those in critical condition were airlifted to Zamboanga City, where local authorities requested medical assistance from *Mercy*, anchored about 1-mile offshore.

Medical supplies were immediately sent to the pier, where two doctors from the ship were already assessing the victims' conditions. Six of the injured were placed on litters and transported by *Mercy* boat crews to the ship's medical treatment facility.

Tri-service and Philippine Armed Forces medical teams quickly put mass casualty reception training into swift, humanitarian action. Like clockwork, doctors, nurses, and medical technicians worked cohesively to stabilize the victims.

"What we're seeing here is our Navy training really put to use," said HM3 Stacia Harriman, an orthopedic specialist from Naval Hospital, Oakland. "This is what this ship is about—what it's designed to do," she said. "This is a true humanitarian gesture where we can use our training to help out in time of need." Harriman was one of several people on the trauma team called in to assist in the emergency.

The ship's 12 operating rooms, 80-bed intensive care unit, and 1,000-bed hospital make it the largest trauma

center in the United States.

With practiced precision, three men, a pregnant woman, and two children were quickly brought aboard and rushed into casualty reception. Following assessment of injuries that included fractured arms and legs, a fractured skull, facial lacerations and abrasions, and burns, four of the six underwent surgery.

CAPT John D. Matheson, DC, who performed a 4-hour rigid fixation and fracture repair surgery on a victim's jaw, said he was "impressed" with the way trauma training was effectively put to work. "We mustered an entire trauma team, had four operating rooms on line and ready to go, and used state-of-the-art surgical procedures to get these patients the best medical care possible. It was an effec-



Left: CAPT Ben T. Ho, MC, ophthalmologist, and CAPT Robert Brewer, MC, a plastic surgeon, examine an X-ray of another 3-year-old victim who suffered an eye laceration. The team performed surgery on the child through most of the night. Below left and middle: Army CAPT David Goldberd, a pediatrician aboard *Mercy*, places dressings over the burned child.

PH2 Donna Walker



SP4 Mike Hagburg, USA



PHC John Kristoffersen



tive display of training," he said, "and we still maintained a full OR schedule the following day."

"The teamwork here has been so smooth; it's gratifying to see it all come together like this," said CDR Judith Lombardi, NC, assistant director of Nursing Services. Teams from nearly every department on the ship—nursing services, surgery, radiology, anesthesia, and pharmacy—worked on what were termed "no simple cases" of complicated multiple injuries.

"You have to know what you're doing in a fast-paced atmosphere like this because you don't have time to stop and think about it—you just have to act," said Harriman.

All six patients were in stable condi-

tion prior to being released to a local hospital for followup care before the ship sailed. *Mercy* provided instruments, medicine, and other medical supplies to the local hospital, which treated other victims of the same accident.

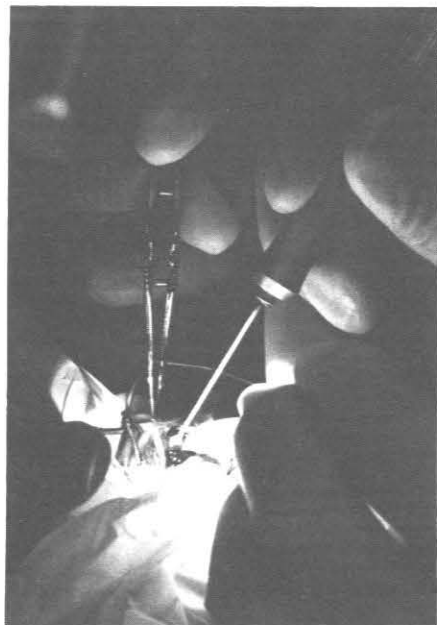
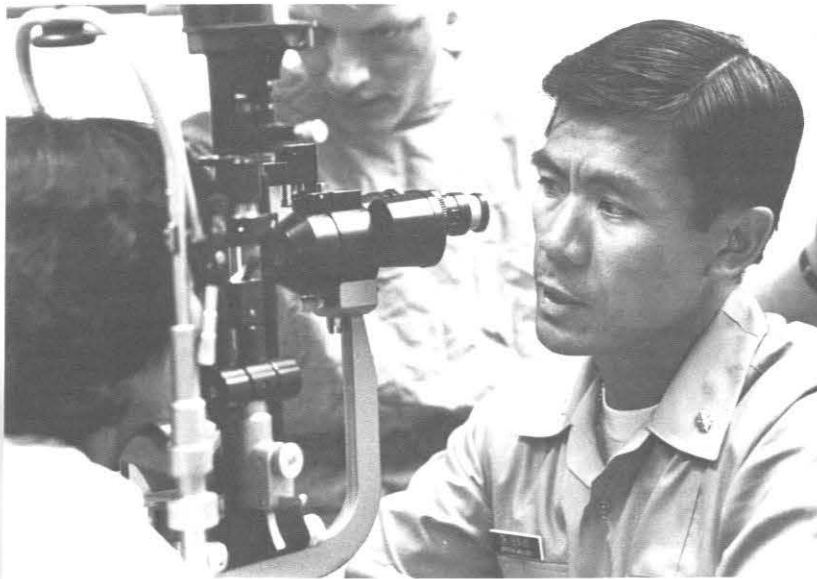
For the patients and their families, the *Mercy* visit was a stroke of luck. "We can be very thankful this ship was here," said CAPT Erlina Nombreda, an Armed Forces of the Philippines nurse who is training on *Mercy*. "We don't have the kind of facilities to accommodate these patients in the local area. It was just a good thing we were here when we were."

—TSGT Cordelia L. Rackley, USAF

* * *

A tri-service/ Philippine Armed Forces medical team works rapidly to stabilize one of the victims.

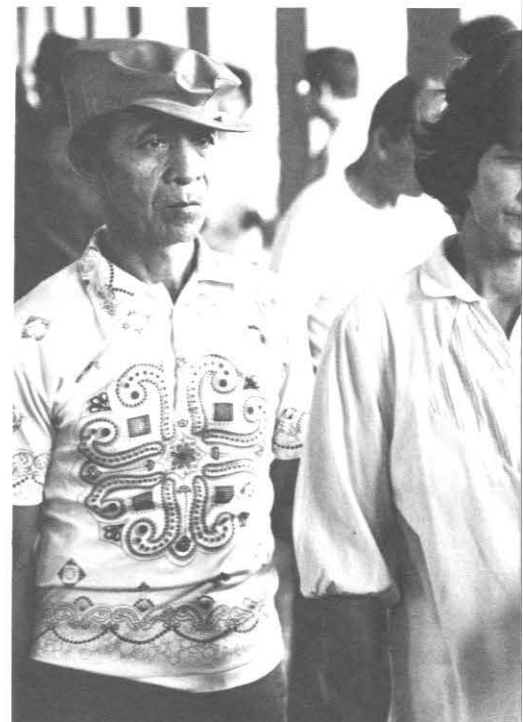
Below: Dr. Ho examines Leila Gumnad. Right: Dr. Ho, assisted by Dr. Flora Curioso, performs Leila's eye surgery.



As the cornea is lifted, a cryo (frozen) probe removes the opacified lens.



After the lens is retrieved it is sent to the ship's laboratory.





"Oh, you're Chinese," said Leila Gumnad when she saw the face of the Navy doctor who had restored her sight. Then her emotions took over, and as her eyes welled up with tears, in halting English she said, "I'm so grateful. Thank you, doctor."

Gumnad, 51, from Davao del Norte, was one of 16 cataract patients scheduled for eye surgery aboard *Mercy* on its stop in Davao City, Republic of the Philippines. CAPT Ben T. Ho, MC, an ophthalmologist from Moraga, CA, was the recipient of her gratitude.

"It's so great to see the patients' reactions when we take off their eye

patches after surgery," said the 42-year-old surgeon. "I try to pick the most deserving patients; those who are indigent or who cannot take care of themselves. We had about 100 candidates for cataract surgery here in Davao," he said. "We schedule about 15 in each port we visit."

The surgery takes about 1 hour and the patients spend 3-4 days on the ship under observation before joining their families ashore.

"While we were in Olongapo we had one patient who left the ship with almost 20/20 vision using special glasses," he said. "In Legazpi we had a number of pairs of aphakic lens glasses donated by the Philippine Department of Health in Region Five. Unfortunately, we don't have enough to give to every patient." Gumnad returned to shore with a pair of the glasses.

Unable to afford the cost of the surgery, Gumnad said it was a choice of eating or seeing again. "I will never forget this," she said. "My prayers go with you."

—Story and photos by PHC Chet King, USN

* * *



Left: Dr. Ho performs cataract surgery using a microscope. Below: The patient sees her surgeon for the first time.



Above: Leila (center) had been blind for several years with cataracts.





With Mayon Volcano providing a majestic backdrop, a utility boat from the hospital ship Mercy returns to the ship in Albay Bay near the town of Legazpi on the Philippine island of Luzon. Legazpi was Mercy's second stop on the training and humanitarian cruise to the Republic of the Philippines. The Ship's Boat Operations Division was responsible for the safe transfer of hundreds of patients and medical personnel to and from the ship in each port visit.

In a classroom of the Santa Ana Elementary School in Davao City on the island of Mindanao, a portrait of Philippine President Corazon Aquino looks down on Navy dentist CAPT John D. Matheson as he begins extracting 17 decayed, abscessed teeth from a Filipino dental patient.

Not 10 minutes before, the director of dental training at Portsmouth Naval Hospital had extracted 14 teeth from another ailing Filipino.

"He's going to know he's been in a dentist's chair tomorrow, but we give them painkillers to help out," said the 44-year-old Norfolk resident. "Believe me, that pain will be minor compared to how he felt before he sat in my chair."

Matheson's shipboard dental facilities include four treatment rooms, two operating rooms, and a prosthetics lab. Ashore, the dental clinic uses up to 12,000 pounds of portable field equipment and supplies. "We can support a Marine amphibious landing for 15 days. This is the gear you see here at the shore clinics," he said.

Matheson, a veteran of almost 18 years in the Dental Corps, heads the Dental Department aboard *Mercy*.

"Patients needing fillings and root canal work are taken to the ship because of time constraints in the field and to provide the benefit of training to our Filipino counterparts on the ship," Matheson said. "We also repair cleft lips and palates, make prosthetic devices, and remove benign tumors in the jaw. We're talking about 80 patients for that kind of work during a 10-day visit."

Pulling teeth (15,000 as of Davao, the ship's third stop) keeps the *Mercy's* American and Filipino dentists and technicians busy in the field.

"There are eight of us from various dental clinics in the Norfolk area," said Matheson. "I have some really top-notch people. I can honestly say this is the best group of dental people I've worked with from the standpoint of getting in there and getting the job done. They've shown a lot of camaraderie and teamwork."

DT3 Roxanne Clark from the Naval Amphibious Base, Little Creek, VA, dental clinic said, "I've seen more dental decay and diseased gums here than I've seen in the States."

"Education, diet, and fluoride have essentially eradicated tooth decay in our country," said Matheson. "The Filipino dentists are very interested in our dental procedures and training. We leave audiovisual material and books behind in every port and lecture at local dental society meetings."

During our first stop at Subic Bay Naval Base we worked under tents in dust and 106° F temperatures. After a week under those conditions we knew we had been to work," Matheson said. "We have seen almost 6,000 patients of all ages who have been very stoic about their pain, but they've also been very grateful." —PHC Chet King, USN

* * *

SP4 Mike Hagburg, USA





Mercy glides beneath the San Francisco/Oakland Bay Bridge on the way to her new homeport at Naval Supply Center, Oakland.

Mercy arrived at her new homeport on 13 July 1987 from the successful 4½-month training and humanitarian mission.

ADM Lyons was on hand to greet the ship and present the crew with the Meritorious Unit Commendation Medal.

"We have shown we can project power," said ADM Lyons. "By the *Mercy* efforts we have also shown we can project humanity," he added.

Oakland Mayor Lionel Wilson welcomed *Mercy* with a key to the city saying, "We are proud to welcome *Mercy* to Oakland. This is an historic day for our city."

Other distinguished guests included Dr. C. Everett Koop, U.S. Surgeon General, and Dr. William Mayer, Assistant Secretary of Defense for Health Affairs.

Dr. Mayer praised the mission saying, "The *Mercy* serves to conserve our

fighting strength and take care of our men and women who go in harms way."

The crowd, estimated to be nearly 3,000 people, provided a colorful backdrop for the sunny California welcome.

Mercy will soon enter into reduced operating status where she will be available for call-up within 5 days if needed. □

—Howard G. Thomas

*Families of crewmembers and well-wishers crowd the pier at the Naval Supply Center as *Mercy* approaches.*



Another Viewpoint

Military Medicine

HMCN Roger W. Yack, USN

Much has been publicized recently about deficiencies in the military medical system. Reports have been widely circulated about misdiagnoses, surgical errors, and other errors and problems. In reading many recent articles and news reports, one almost gets the impression that putting oneself under the care of a military medical facility is a life-deadly mistake.

While the military medical program has its share of problems, it is not fraught with the level of ineptitude as the media would have you believe. I would like to share an experience which not only demonstrates accurate diagnosis and excellent care, but superior cooperation between military and civilian hospitals and staffs in an effort to provide the best available care.

I am a master chief petty officer with 24 years of naval service. I am 43 years old, in good shape, physically active and have always been generally in good health. On the negative side I am a bit overweight, but within standards and smoke entirely too many cigarettes.

Approximately 2 June 1985, I began experiencing a mild discomfort in my lower back, which I ignored, feeling sure it would subside. The discomfort persisted for a couple of days and I felt I might have strained my back, though I could not recall any heavy lifting or stress.

Eventually, I told my wife about the pain. As I lay on my back, I had her press on my abdomen. I found that pressure on the left upper area of the abdomen caused tenderness and a sharp pain from there to my mid-lower chest area. I was somewhat concerned

about this but reasoned it was either a urinary tract infection or from my 1½-pack-a-day cigarette habit. My wife was more worried than I was and made me promise to "do something" about it the next day.

The following morning I went to work as usual. I worked at the Naval Hospital in Portsmouth, VA, so I knew some of the staff there. I deliberated on how to keep my promise to "do something" without having to see a doctor as I still did not feel ill. I decided to have a friend in the laboratory run a urine test to support my guess of a urine infection, then it would simply be a matter of getting a doctor to prescribe the appropriate medication.

The urinalysis was done that day, but the lab technician discovered an inordinate amount of red blood cells in the urine sample and recommended I seek medical advice. We went to see CAPT Prior, a pediatric nephrologist whom I know and trust a great deal. After reviewing my medical history and the results of the urine test, he suggested I might have an early kidney stone which could be treated with a urinary cleansing agent. Before I was to take any of the medicine, he requested I obtain a sterile urine specimen for further evaluation.

When the lab technician studied my second specimen he said, "This looks worse than the first one" and felt that CAPT Prior be notified of the increased severity of the problem. I took the results with me and told him I would call the doctor from my office.

Upon return to the office I told my inquisitive staff that I had a minor problem which could be controlled

with medication. When I talked with CAPT Prior, he was concerned about the changes in the urine test and suggested I be seen in the urology clinic. A few moments later the phone rang, the urology clinic was requesting that I report right away for the examination.

I presented myself to the young hospitalman at the clinic and within a few minutes I was ushered into CDR Jordan's office. He began by explaining the need to document a history and physical for my file in case I had to return to the emergency room later that evening for further evaluation of the stone.

After taking the history, he asked me to strip to the waist and lie on the examining table. He felt my abdomen several times, tapped my feet, felt my back, and then returned to probe the abdomen. He left the room for a moment and returned with CAPT McDonald, the head of Urology Services, who also felt my abdomen and my back. The two doctors exchanged words by the door and the captain left. CDR Jordan told me I could get up and they would arrange for some X-rays, either an IVP (intravenous pyelogram), a KUB (X-rays of kidney, ureter, bladder), or an ultrasound.

Just as we were getting ready to leave the room, he stopped me and said, "Master chief, in a stringbean-type person it is not uncommon to palpate (feel) an occasional aorta, but with someone who has a little thicker abdomen like yourself it is uncommon to do this. We suspect you may have an aortic aneurism."

I looked at him for a second and replied, "You've got my attention" though the impact of what he said did

not really enter my consciousness.

CDR Jordan escorted me to X-ray where I was stripped, draped in a paper gown, placed on the X-ray table, and informed that I would be having an IVP. I asked the technician to confirm with CDR Jordan because he had also mentioned a KUB or ultrasound. Eventually, it was decided a KUB would be done first and would proceed based on those results.

They shot and developed the film, then I was escorted to another room where I sat in a lounge chair. Things were starting to happen very rapidly and I was becoming very confused. There were seven or eight doctors reviewing my X-rays and I overheard bits and pieces of conversation about surgeons and surgery, IV's, and transportation. I heard someone mention that Norfolk General (a large civilian teaching hospital across the Elizabeth River) had the surgical staff, operating room, and intensive care facilities to accommodate the necessary procedure. They also discussed using the regular ambulance or nightingale, the emergency helicopter ambulance.

LCDR Peterson started an IV in my left arm and LT Chambers from surgery stayed with me while the doctors discussed the X-rays, arranged transportation, and coordinated the referral and necessary procedure with Dr. Aladj from Norfolk General. As soon as the IV was started, I was loaded on a gurney and the adventure began.

I asked a technician to find a friend of mine, HMCM Dave Krueger. When Dave arrived, I explained the situation and he promptly took charge of my clothes, wallet, and vehicle. He notified my wife of what was happening and that I was being prepped for immediate transfer to Norfolk General Hospital.

The doctors had opted for ambulance transportation rather than helicopter and a lieutenant accompanied me during the ride. The driver asked the lieutenant how he wanted to go and he replied, "Lets go with everything." I vaguely heard the siren and felt the movements of the ambulance.

The traffic must have been held up at the tunnel because we breezed right through there in the middle of rush hour. It only seemed to take a few minutes to get to Norfolk General.

On arrival, I was first greeted by Dr. Aladj. He appeared very young, but I was soon convinced he was extremely competent. He explained that he had already conversed with the Navy doctors and now he would do a special X-ray called a CAT scan to get a better look at the aneurism. In the interim, the hospital staff started another IV in my arm while the doctor started yet another in a vein in my neck.

The CAT scan machine resembles an iron lung that feeds your body through while continuously taking pictures. The procedure took a few minutes. I was still in the scanner when Dr. Aladj came to me and said, "The aneurism is larger than we originally thought; we don't want to waste a lot of time, and you need to be in surgery now." My reply . . . "Lets do it."

Dr. Aladj proceeded to get the necessary informed consent which consisted of him informing me of all the possible complications of the surgery. These included the possibility of impotence, paralysis from the waist down, or death. I was told it would be certain death without surgery. I wasted no time signing the consent form.

I was wheeled into a cubicle to await further transfer to surgery. I was alone for only a very brief time, but was, however, never out of sight of the hospital staff. All through this day I had felt only slight nervousness and apprehension. The full impact of what was happening had never really sunk in. Dr. Aladj entered the room and asked if I was ready to go.

As we arrived at the operating room, I said to the doctor that I expected, as a minimum, to feel drowsy by now. He replied, "Mr. Yack, please believe me when I say, by the time I am finished . . ." That was the last I remember for 2 days.

In surgery they opened my abdomen from chest to pubic area and repaired the aneurism. I was taken directly to

the vascular intensive care unit. I had machines to breath for me, monitor my heart, blood pressure, venous pressure, IV's, a tube to drain my stomach, and another to drain my bladder. The nursing staff responded immediately to my every request.

Though the entire staff was exceptional in their professionalism, there was one person I dreaded to see—the respiratory technicians (the suction monsters). Their job was to keep my lungs clear by getting me to cough and breathe deeply. Sneezing, coughing, and deep breathing were the three most difficult and painful things I had to do, but the respiratory technicians had no mercy, they forced the issue and kept my lungs very clear of obstructions. I believe it was mostly due to their efforts that I was discharged from the hospital earlier than expected.

I progressed from intensive care to a regular post-op floor and received excellent care throughout my hospital stay. I was discharged after only 6 days in the hospital.

The most important aspect of this experience, to me, was the level of excellence of the staffs involved. In spite of my trying to "buck the system" by not seeing a doctor initially, I must commend:

- The laboratory staff for identifying the abnormality.
- The rapid response and referral to a specialist.
- The staff's ability to recognize the presence of the aneurism.
- The fact that I was never left alone or out of sight once diagnosis was made.
- The coordination and cooperation between military and civilian hospitals and staff.
- The surgical and postoperative care.
- The high level of professionalism and compassion of the staffs of both the Portsmouth Naval Hospital and Norfolk General Hospital. □

HMCM Yack is assigned to Destroyer Group Eight.

Turning Into the Wind . . . A Time for New Beginnings

VADM James A. Zimble, MC, USN



There is no question in my mind that we need to change the way we do business in the Navy Medical Department. Change and forward movement are directions which will be our blueprint for the next 4 years, a team effort which must involve each of us and to which each of us can make an important, lasting contribution. There are some very good reasons for this.

Until just a few years ago, Navy medicine enjoyed a reputation for excellence, was at the leading edge of technology, and set many of the standards ultimately adopted by civilian medicine. The emphasis on quality and many good people are still here, but along the line we lost the magic, the preeminence, the reputation for being the best. Events, history, and medicine changed many things in a short time; in some cases we did not adapt: we did not change. The time has come to restore these things. We need to get back on a course upon which we can clearly navigate. We know we can meet such expectations.

It is no secret that most of the problems of Navy medicine today can be traced to resource shortages in one form or another. It is an oversimplification, however, to accept that without examining other factors which have contributed. Unless we understand the problem in detail, we can't

solve it. We must also acknowledge that our problems are closely interwoven with those of the Navy and Marine Corps as a whole; therefore, we must have the enlightened understanding of our line if we are to solve these problems. After all, it is our line which benefits.

A constrained budgetary environment and the need for a 600 ship, 5,000 aircraft Navy/Marine Corps have combined to exacerbate everyone's shortages in the support establishment. World events clearly validate the need for a large, capable Navy, capable of facing such diverse challenges as keeping Atlantic and Pacific sealanes open, deterring international adventurism, and ensuring the free flow of oil from the Persian Gulf. Seldom in peacetime have events demanded more of the fleet and its people. National priorities are numerous and the stretching of assets a fact of life.

We got ourselves into the resource shortages of today by being good sailors, with the traditional, positive, "Can do!" approach to challenges. Thus we acquired new taskings, responsibilities, and additional missions without commensurate increases in people and money to accomplish those missions properly. At the same time, demographics were sneaking up

on us. More young sailors and marines were getting married than ever before. More single parents were part of the force. More of our retired members and their families were living longer thanks to quality medicine, thus requiring additional care. While we were taking on responsibilities which would increase our wartime capability with MMART teams, fleet hospitals, hospital ships, SPRINT teams, deployments with the FMF, and other requirements, our beneficiary population was growing in size dramatically.

Further, we largely overlooked keeping our line colleagues informed about the growing changes which affected our ability to provide medical care in both peacetime and wartime. That oversight denied the average line commander adequate information about his medical needs and how we were configured to meet them.

If our foresight in the 1960's and 1970's were as good as our hindsight now, we could have anticipated some of the problems which now confront us. We could have projected the growth in our retired population and some of the demands of maintaining state-of-the-art medical practice. We could even have predicted the need for improved balance between our wartime capability and the peacetime needs of our beneficiaries, thus helping

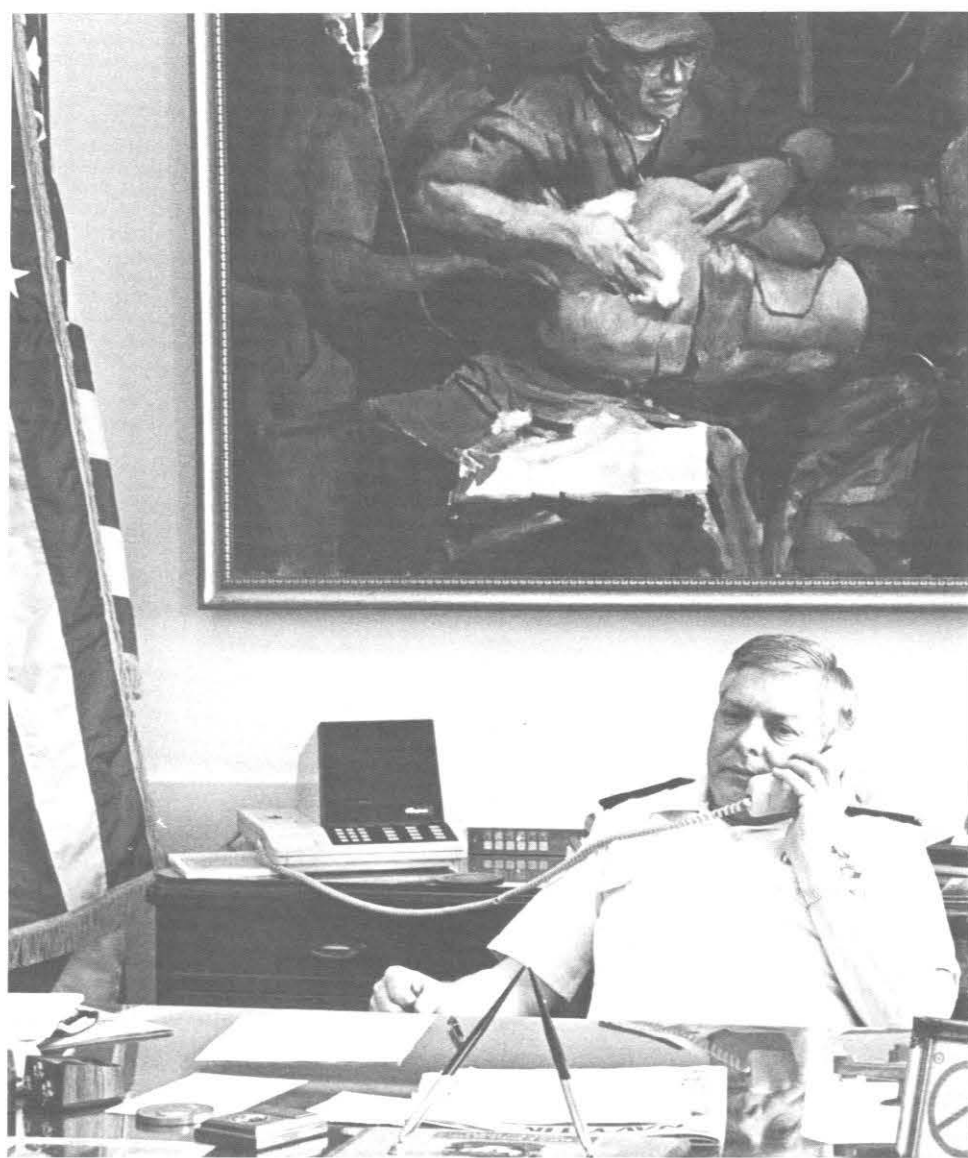


to retain good people in the Navy and Marine Corps.

What we could not have predicted was the enormous public and media attention which medicine has experienced in recent years. Medicine's great strides in innovative, lifesaving techniques and technology produced a combination of need for additional skilled personnel and the expectation by the patient public that mortality and morbidity would largely become a thing of the past. Overnight, medicine became a zero-defects industry. A few highly dramatized cases of medical misadventure captured headlines, neglecting to mention the context of millions of successful patient visits, admissions, and surgical procedures which formed our true performance base. Quality assurance became an integral, permanent part of the medical process, with its attendant requirements for skilled personnel. All of these are facts of life and facts of change.

Just as we have read some of the lessons of today from the perspective of the past, we must foresee the lessons of the future and take those actions which we know are needed to meet challenges head-on. We must turn into the wind and engage the future now, if we are to have the necessary range of medical capability which we clearly need.

First, we must know that dollar and people environments will continue to be tight. While our near-to-inter-



mediate term personnel shortages can be met with contract personnel, we must make a fully validated case for the urgency of having these personnel. Among other things, we must clearly demonstrate to our line colleagues the direct relationships in two important areas. The first is our contribution to combat readiness in its classic form, the forward-deployed and CONUS-based capability to handle combat casualties. We must show how civilian providers will give us the flexibility to free up military providers for deployment where needed. The second is our unique contribution to the principal ingredient of readiness, the retention of good people in the Navy and Marine Corps through the quality and availability of medical care to service people and their families.

Twenty years worth of personnel

surveys are clear; medical care immediately follows adequate pay as a prime retention incentive. As I see it, that's not going to change. The 1990's will be a known manpower-short decade. The competitive situation we will be in for quality manpower is equally clear. We cannot do what we must do in supporting overall Navy and Marine Corps readiness unless we have the means to meet these vital retention needs fully. That is a message which each of us must make clear at all levels of command throughout the system, along with our determination to do our part in meeting this challenge.

Secondly, we can expect no lessening of medical commitments to any of the roles for which the Navy and Marine Corps have responsibility. The operational needs to meet increased national taskings, the flexibility which



ity. We cannot and should not shrug our shoulders and hide behind the letter of the law which speaks to space availability for dependents and retired. Today's active community watches how our retired colleagues are treated. It would be naive to think that our credibility in this regard is not closely tied to the retention of some of our best people. There is also the simple but compelling argument that it is *the right thing to do*.

None of what we seek to do in the future, whether it be improve the com-



must be inherent in rapidly-changing situations and new challenges, all will be ours to support medically as part of the Navy/Marine Corps team. We must make clear our alacrity in supporting command missions, and at the same time make known our needs in order to perform those missions as professionals.

Thirdly, we remain the implementors of a moral obligation undertaken by the Navy and Marine Corps years ago, when medical capacity and personnel validated the implied commitments made by recruiters to provide lifetime medical care for retired people and their families. There is no question that this commitment is widely perceived to exist, and that we must do everything possible to maintain the moral commitment and credibility of our promises to the retired commu-

bat readiness of the force, improve retention through adequate access to care, or meet our moral commitments to the retired community, will be possible without substantially improving our graduate medical education programs and technical training programs. We must diversify our patient population to include the highly challenging caseload which provides good training and, at the same time, helps beneficiaries who most need our assistance. We must have strong teaching and research programs which ensure the clinical excellence of our medicine into the 21st century, and we must provide means to those excellent teachers and researchers to advance in their fields. Challenge and excellence in those programs is one of my highest priorities for the future, and I plan to make investments in those areas.

The future success of Navy medicine depends upon two things—assets and attitude. The asset aspect is pretty clear to us, and we must continue to help make it clear to our line colleagues. Attitude is the other factor in the equation. Medicine is not just an appendage tacked onto the pistol belt of the Navy and Marine Corps; it is an integral, inherent part of the force. We must be ready on arrival, whether at sea or foreign shore, to handle any medical contingency, anyplace, anytime, no exceptions, no excuses. We must demonstrate to the Navy and Marine Corps what it takes to provide this capability, and then make demands to ensure that we have it.

At the same time, we must not only be the healing hand, but the healing voice to our patients. We serve the superb people of the greatest Navy and Marine Corps in the world as well as the retired members who made it that way. We must administer not only care, but caring. Otherwise, we miss the mark in our calling and fall short in our profession. The human element is what makes the Navy and Marine Corps great. So, too, must our humanity be a part of the greatness of Navy medicine.

Those who are looking for easier days ahead, less challenging times, are in the wrong place. We have large-scale changes to make in how we operate, and large-scale challenges to face. We will solve them, we will prevail, but it will not be easy. I need your help each and every day, and pledge you my very best efforts toward this end. I firmly believe that we have within the Medical Department every strength but one to achieve the solution of these problems. The one we lack is resources. Our inventiveness, intelligence, energy, and professionalism will win. I know we can win the asset battle; we need all the good people we can to help us fight it. We will maximize what we get once we get it. Together, having recognized the need for change, we can make it happen. □

Dr. Zimble is Surgeon General of the Navy and Director of Naval Medicine.

Marines Are Marines Are Marines

COL James H. Jeffries III, USMCR



In recent informal discussions among Navy and Marine Corps legal experts, it was suggested that marines assigned to Fleet Marine Force (FMF) medical battalions should be regarded, like their Navy associates, as noncombatants—protected under Article 24 of the Geneva Sick and Wounded Convention of 1949.⁽¹⁾ If these marines were considered Article 24-protected, they would enjoy certain rights and privileges not available to other marines of the FMF. They would also suffer certain disabilities and limitations not imposed on other marines of the force.

Article 24 of the convention provides that:

"Medical personnel exclusively engaged in the search for, or the collection, transport or treatment of the wounded or sick, or in the prevention of disease, staff exclusively engaged in the administration of medical units and establishments, as well as chaplains attached to the armed forces, shall be respected and protected in all circumstances."

Article 28 of the convention provides that such individuals do not become prisoners of war (POW's), are retained in custody only to the extent necessary to minister to POW's, may only be required to perform medical and religious duties, and enjoy certain freedoms necessary to carry out those duties. Article 30 requires that those retained medical (and religious) personnel not required for tending POW's

be repatriated "as soon as a road is open for their return and military requirements permit." According to articles 39 and 40, they are permitted (under direction of competent military authority) to wear the Red Cross armlet and required to carry a special identity card. Although not directly adverted to in the Geneva Conventions, it is generally held that Article 24 personnel may only be armed with small arms—only for their self-protection and the protection of their patients.⁽²⁾

Article 24 noncombatants are not required—indeed are not permitted—to resist surrender under Article 2 of the military Code of Conduct and, if captured, have no obligation to resist or to attempt to escape under Article 3 of the Code.^(3,4) They are not authorized to take command of other POW's under Article 4 of the Code.⁽⁵⁾ Their status under the POW command structure is not clear (to me), but it seems that there could be built-in conflicts because of the different rights and obligations of the two groups.

According to Fleet Marine Force Manual 4-5, *Medical and Dental Support*, each force service support group has a medical battalion responsible for medical support of all FMF units above and beyond their own organic capabilities. The battalion provides task-organized units to the supported Marine Air Ground Task Force. It can

handle collection and evacuation of casualties, emergency treatment, temporary hospitalization, surgery, preventive medicine and disease control, and identification of human remains. The battalion consists of a headquarters and service company, a hospital company, and five medical companies. Its 130 Navy officers are all Medical Corps or Medical Service Corps personnel. Its 629 sailors are principally, but not entirely, medical military occupational specialties. Eight marine officers and 333 marines are assigned to routine administration, operations, and service, supply, utilities, communications, and motor transport.

Proponents of Article 24 treatment argue that no intra-unit distinctions are made in the medical units of other services, many of the members of which are engaged in exactly the same duties as these marines, and thus there is no logical basis for treating them differently. In response to the point that every marine is first and foremost a rifleman who may be called on in any conflict to engage in combat, they contend that in a crisis, the marines in question could easily be reassigned to a combat unit. I disagree with these contentions and believe the proposal is fraught with pitfalls.

If the marines in question are to be considered Article 24 personnel, it could be argued that the Marine Corps has been in continual violation of the

Sick and Wounded Convention since U.S. ratification in 1955. However, if a new gloss is to be put on the article, a number of difficult questions are raised. The marines involved would have to be issued special medical identification cards (Article 40). Would they also be issued (or carry) standard identification? What would be the fate of a marine captured in possession of both? What training and operational guidance would be necessary to educate a commander that he had "noncombatant" marines in his command? What force planning requirements would be created? Could such marines be reassigned to combat in an emergency without fostering cynicism or disregard of the law of war by the opponent? Such marines would have to be issued (and under some circumstances wear) the protective Red Cross armlet (Article 40). The same supply, training, command guidance, and compliance issues arise as with the medical identification. How do we deal with the differing Code of Conduct standards for these marines, depending upon their role when captured? Can we realistically train recruits in the Code as we now do, and later tell them that they are not required to resist or to escape if captured because of their assignment to a medical unit? How do we address the training, morale, and psychological aspects of taking a new graduate of Parris Island or San Diego and informing him he is now a "noncombatant"—but that things might change if the going gets hot? Does this proposed change have the potential to erode the (at least theoretical) respect now accorded true Article 24 personnel? If so, should the other services, whose medical members are the only currently recognized Article 24 personnel, be officially consulted on our new position? The position being urged is weighted with unresolved policy, training, and operational considerations.

The advocates of Article 24 treatment reach their conclusion that medical unit marines should be viewed as noncombatants on grounds that the

practice of other U.S. services is in accord and that there is no logical legal basis for the Marine Corps to differ. The first ground is both irrelevant and unnecessary to resolution of the question for the Marine Corps. The second ground is wrong.

On the latter point—illogically distinguishing between the pure medical person and his/her necessary support personnel—there are clearly problems with defining and distinguishing the personnel. As noted and conceded by all concerned, drivers, cooks, and clerks are plainly necessary to the medical function; but so are the engineers who build the medevac helipads, purify the water, and dig the graves; so are the fuel companies who supply the generator fuel; so are the ration platoons and supply and maintenance echelons at division, corps, and theater levels; etc. This argument proves too much.

The other services solve this problem by drawing the line at the first logical division—between medical unit and nonmedical unit. And they reinforce the distinction by establishing solely medical occupational fields and solely medical organizations. The Navy has a Medical Corps, a Nurse Corps, and a Medical Service Corps. The Army and Air Force also have medical departments. The Marine Corps does not. The other services use their most logical dividing line, and so should we: the line between Navy and Marine Corps. The other services do not expect their medical support personnel to double as warriors. Our warriors double as medical support personnel and I do not believe this difference in service missions, training, philosophy, and results requires extended discussion.

It has been argued that medical unit marines could easily be transferred to another unit if their combat power was necessary to accomplishment of the mission. As noted, this would require special medical identification cards and training in their legal limitations and special status and duties under the law of war and the Code of Conduct, and they would not be properly armed

and equipped for immediate combat if armed as Article 24 personnel. They could not be instantly pressed into combat service, as at the Chosin Reservoir breakout, without creating the most serious equipment, training, morale, and law of war questions. Not only would we create serious misconduct questions in the eyes of an antagonist facing these convertible medical warriors, but any such policy could weaken Article 24 protection for those medical personnel who clearly fit within its description and intent. I cannot discern any valid policy or legal reason trying to shoehorn combat-trained marines into Article 24 protection. This seems to me a nonproblem which needs a nonsolution. It ain't broke, and I strongly suggest we don't fix it.

References

1. Geneva Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field of 12 Aug 1949, with Annex, 6 UST 3114, TIAS 3362, 75 UNTS 31.
2. Cf. Sick and Wounded Convention, Article 22, and Article 35 of the Geneva Convention for the Amelioration of the Condition of Wounded, Sick and Shipwrecked Members of Armed Forces at Sea of 12 Aug 1949, 6 UST 3217, TIAS 3363, 75 UNTS 85.
3. "I will never surrender of my own free will. If in command, I will never surrender my men while they still have the means to resist." Art. 2, Code of Conduct for Members of the Armed Forces of the United States of 17 Aug 1955, Executive Order 10631, 20 Fed. Reg. 6057, as amended by Executive Order 11382 of 28 Nov 1967, 32 Fed. Reg. 16247, and Executive Order 12017 of 3 Nov 1977, 42 Fed. Reg. 57941.
4. "If I am captured I will continue to resist by all means available. I will make every effort to escape and aid others to escape. I will accept neither parole nor special favors from the enemy." *Id.*, Art. 3.
5. "If I become a prisoner of war, I will keep faith with my fellow prisoners. I will give no information or take part in any action which might be harmful to my comrades. If I am senior, I will take command. If not, I will obey the lawful orders of those appointed over me and will back them up in every war." *Id.*, Art. 4. □

COL Jeffries is an attorney with the U.S. Department of Justice and commanding officer of the Marine Corps law of war training detachment, Headquarters Marine Corps. Reprinted from *Proceedings* with permission © 1987 (U.S. Naval Institute).

Medical Expense and Performance Reporting System

John H. Bankson

The objective of Medical Expense and Performance Reporting System (MEPRS) is to furnish military health care management with a uniform system for managing and reporting on the fixed military health care delivery system. The purpose of the MEPRS is to establish consistent principles, standards, policies, definitions, and requirements for accounting and reporting of expense, manpower, and performance by Department of Defense (DOD) fixed military medical facilities.

The MEPRS provides in detail: functional work centers, uniform performance indicators, common expense classification by work centers, uniform reporting of personnel utilization data by work centers, and a cost assignment methodology including cost per unit. The system is the basis for instituting a uniform reporting methodology that supplies consistent financial and operating performance data to assist managers who are responsible for health care delivery. The results are produced in a report for each facility with a standard format. Naturally, the data must be current, accurate, and complete in sufficient detail to permit management review and audit.

The system applies to the Army, Navy, and Air Force fixed medical treatment facilities (MTF) involved in the provision of direct patient care, such as medical centers, hospitals, medical clinics, dental clinics, and certain other activities such as special programs.

The MEPRS does not apply to facilities not involved in the provision of

direct patient care (such as medical research facilities, medical training facilities, and medical environmental health facilities) nor medical facilities for field service (aid stations, clearing stations, and division, field, and force combat support and evacuation hospitals), medical facilities afloat (hospital ships and sickbays aboard ship), tactical casualty staging facilities, medical advance base staging facilities, and medical advance base components contained within mobile-type units.

System Implemented and Installed

The Uniform Chart of Accounts (UCA) and the Uniform Staffing Methodologies (USM) systems were developed and implemented separately within the military health care system. The UCA grew out of the need to track expenses within the military health care facilities. The USM was concerned with manpower resources. At the fixed medical MTF level, it became evident that the most effective and efficient utilization of recording and using information for these systems was to merge the data collection function and ultimately the two systems and reports. This was completed in fall 1985 with the merging of the two into the MEPRS.

UCA Background

The Office of Management and Budget, DOD, and the Department of Health, Education and Welfare, acting on a mandate from the President, initiated a joint study on the military health care system in August 1973. The

four principal concerns providing the need for this study were:

- Anticipated physician shortages.
- Increased overhead and support costs throughout DOD.
- Quality of systems for planning, management, and evaluation.
- Social equity of military medical care and its compatibility with national health care objectives.

In developing the UCA, attention was given to the existing accounting and reporting systems that were in place and functioning within the military medical departments. Differences in military missions, system sizes, hospital requirements, and other distinguishing factors were taken into consideration. In considering an integrated military accounting and reporting system, the following three components were identified as essential:

- Standardized Uniform Chart of Accounts.
- Performance Measurement System.
- Reporting Collection System.

USM Background

In 1974 and 1976 the House Appropriations Committee recommended that DOD develop and use uniform standards in determining medical manpower requirements. Congress wanted to compare the military services' medical manpower determinants and costs. From this, a project to develop the USM across the medical departments of the Army, Navy, and Air Force evolved.

The working group was formed in 1978 to begin the development of a uniform methodology. The development of common work center descriptions was tentatively approved, and work on the development of a uniform medical manpower reporting system was begun. In addition, this effort was aligned with the UCA.

The USM's impact on the individual medical services was through program estimating equations developed from the Uniform Staffing Report with a formula and coefficients specific to each medical service. While the approach or method to develop the estimating equations was the same for all military services, the data used to develop them as well as the resulting use were service unique. Changes in workload factors (such as population, patient days, and visits) can be applied to the functional estimating equations to determine macro requirements (such as total service pharmacy manpower requirements). Beyond this, each military service would determine grade and specialty mix.

By utilizing a common methodological basis, the three military departments would be using a uniform, scientifically derived tool for determining, budgeting, defending, and allocating basic requirements. With this uniform tool, long range forecasting techniques could be developed.

New System Concept

During peacetime, the Military Health Services System must be concerned primarily with establishing, maintaining, and improving its capability to respond to national security requirements, and secondarily with cost, efficient staffing, economic use of resources, the establishment of measurable and achievable objectives, and the planning for the accomplishment of these concerns. The focus is on the secondary purposes. A consistent effort must be made to accumulate the necessary expense and performance data and analysis so that each management level can identify, define, correct, or improve its normal peacetime health care delivery system. There is

also a need to specify individual and group responsibility and accountability, as well as financial accountability in terms of resources that are available, used, and expended.

The MEPRS assists managers at all levels of management in the processes of decision making and in performance evaluation. Managers need current, accurate, and complete quantitative data for decision making, comparing actual performance with objectives, analyzing significant deviations, and taking corrective action. The MEPRS is thus a system of manpower and cost distribution and expense reporting that provides management with a basic framework for responsibility accounting and the flexibility to categorize financial information of functional activities that may cross organizational lines.

With the increased concerns about defense expenditures, the national focus on the escalating cost of health services, and the perception that management of the Military Health Services System can be improved, it is expected that the single expense and manpower system is needed and usable. The use of uniform classifications, uniform methods, workload, and definitions provide a common standard of measurement, make comparisons

more meaningful, and provide a basis to make better resource decisions in the operation of the military health care delivery system. The following benefits and use are expected from the MEPRS:

- Cost awareness by personnel at all levels from managers to health care providers.
- More current, accurate, and complete expense information in one reporting system and data base.
- Expense assignment to the primary work center that incurs the cost of performing a health care service.
- A reliable and relevant management information system.
- Cost-effectiveness evaluation in any decision-making process.
- Provide information to the budget process.
- Comparisons among the three military services medical facilities.
- Comparisons among military medical facilities and other government-sponsored health care systems.
- Comparisons among military medical facilities and the civilian health sector. □

Mr. Bankson is a cost accountant at the Naval Medical Command's Progress Reports and Statistics Branch (MEDCOM-142), Washington, DC 20372-5120.

Occupational Health Workshop

The Navy Environmental Health Center will sponsor the 30th Navy Occupational Health and Preventive Medicine Workshop from 27 Feb to 3 March 1988 at the Pavilion Towers Hotel, Virginia Beach, VA.

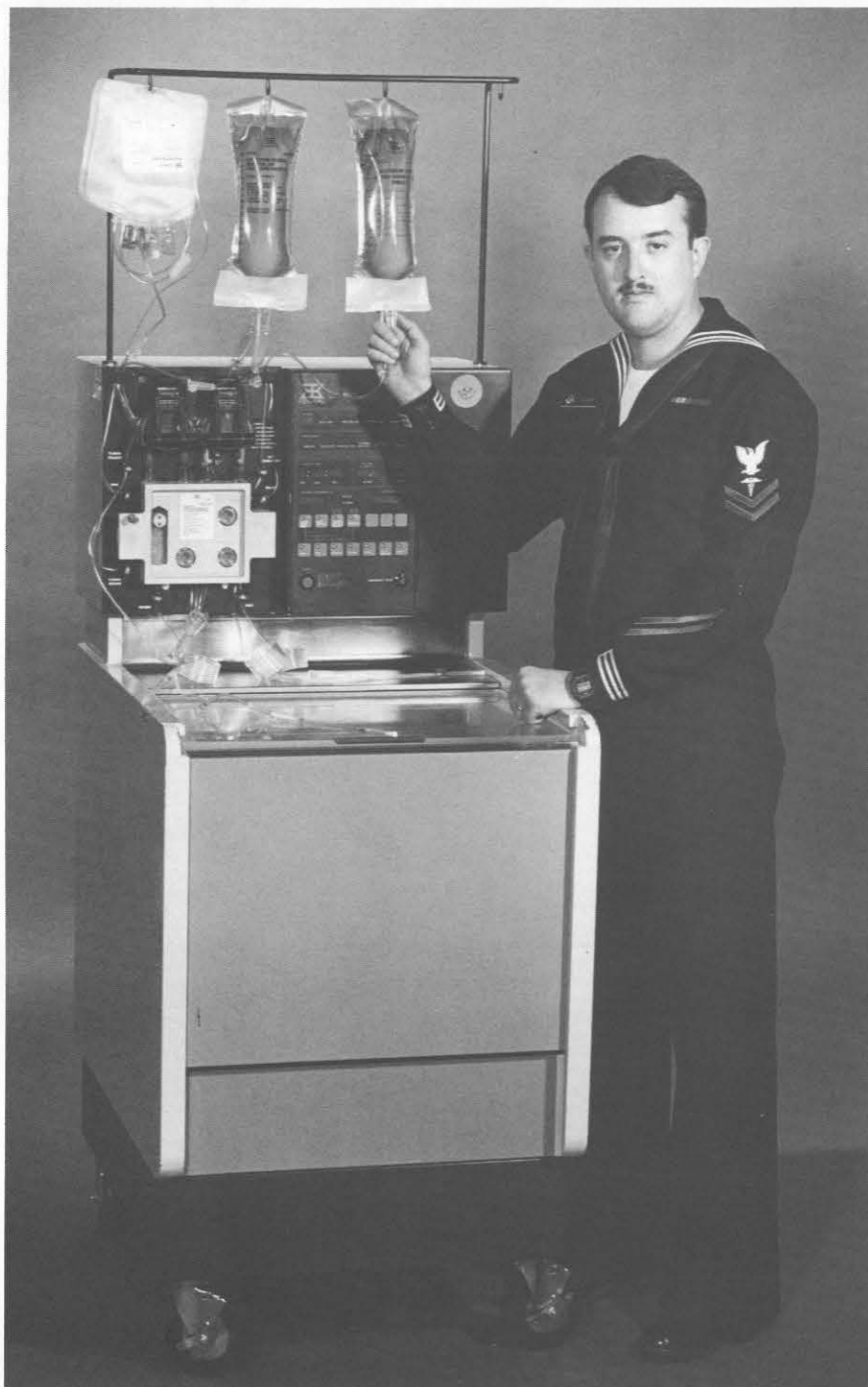
Occupational health and preventive medicine personnel are encouraged to attend this workshop. There is no registration fee.

The workshop has been approved for CME/CEU credits and maintenance of certification points for certified industrial hygienists.

For additional information contact: Dianne Best, Navy Environmental Health Center, Naval Station, Norfolk, VA 23511-6695. Telephone: Autovon 564-4657, Commercial (804) 444-4657.

Plateletpheresis Spoken Here

CDR Donald A. Smith, MSC, USN



HM3 David Vangelder

HM3 Michael Clark is shown here with a Fenwal Model CS3000 cell separator machine, which harvests platelets using continuous-flow methods.

As anyone involved in clinical medicine can tell you, the treatment of thrombocytopenic patients depends on the availability of platelet concentrates for transfusion. Hospitals with active surgical and hematology/oncology services require large amounts of these cellular products every day. The Naval Hospital at Bethesda, MD, is a good example of a medical facility where the demand for platelet transfusions never stops. Fortunately, this hospital has its own Blood Bank and is usually very successful in meeting transfusion requirements.

Platelets can be obtained by two methods. The first involves the harvesting of platelet-rich plasma (PRP) from a pint of whole blood using a centrifuge. After the PRP has been separated, it is centrifuged again. This produces a "button" of platelet concentrate. The excess plasma is removed from the button, and the platelets are allowed to disaggregate spontaneously. Platelets prepared in this manner are called random-donor platelets.

The second method involves cell separator machines and is substantially more sophisticated. A catheter is inserted into the donor's arm, and blood is gently pumped into a centrifugal separator assembly inside the machine, where the platelets are selectively separated from other blood components. Red cells and plasma are returned automatically to the donor's circulatory system. This technique is known as plateletpheresis, or apheresis, and generally takes about 90 minutes to perform. Platelets harvested by cell separator machines are known as single-donor platelets. Although the collection technique is more time-consuming, it results in a more concentrated product.

HM2 Annie Doran loads a plastic harness into the pump of a Haemonetics Model 30 cell separator machine. This instrument employs discontinuous-flow technology.

centrate by way of the cell separator machines and shows no sign of slowing down. Not only is he the "champion donor" at Bethesda Naval Hospital, but he has probably donated more single-donor platelets by apheresis than any other person in the military community, regardless of branch of service.

What is even more surprising is that CAPT Fellowes is a former POW. While piloting an A6 Intruder over Vietnam, his aircraft was shot down on 27 Aug 1966. He ejected and parachuted safely to ground, but was later captured by North Vietnamese militia and imprisoned. During his internment at Hoa Lo Prison in Hanoi, he was subjected to brutal interrogation and torture by prison guards. At one point during captivity, the guards inflicted such severe injuries that he lost the function of both arms for several weeks. He remained a prisoner in Vietnam for over 6 years and was finally released on 4 March 1973.

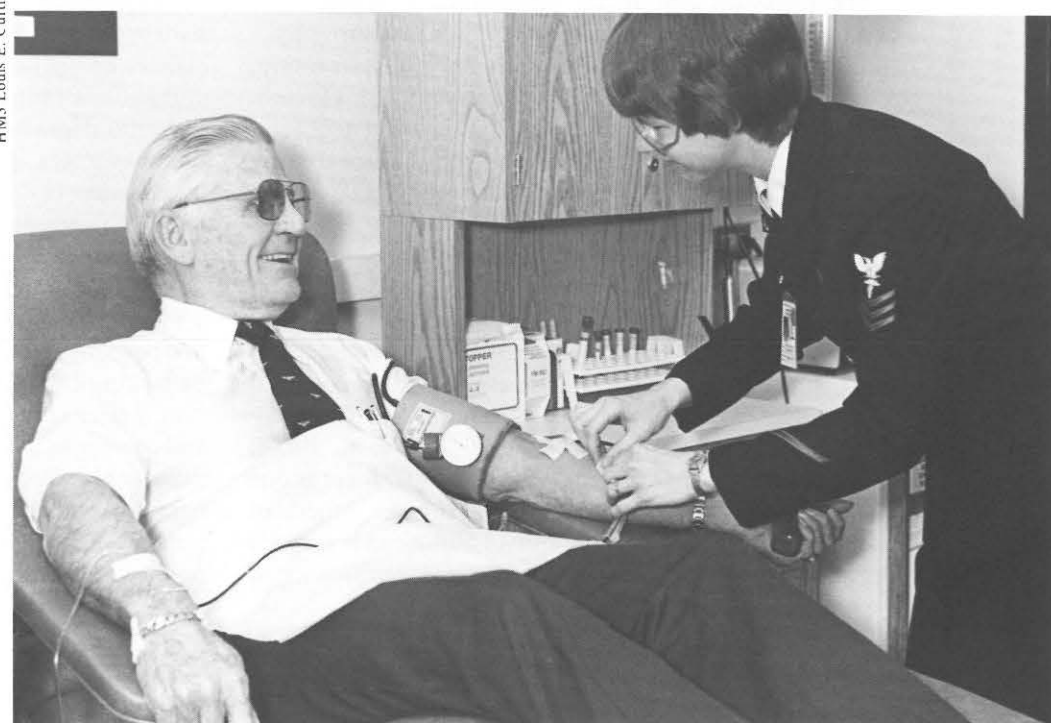
CAPT Fellowes first became interested in donating platelets during his assignment as the administrator for the Regional Physical Evaluation

Board, Naval Medical Command, National Capital Region, Bethesda, MD. His official duties brought him into contact with the Blood Bank staff, and he subsequently became a regular participant in the plateletpheresis program. He retired from the Navy in 1986 after 30 years service and settled in Annapolis, MD. However, he has the stamina and energy of people half his age, and continues to support the Navy Blood Program by commuting 45 miles between Annapolis and Bethesda on a regular basis to donate platelets.

When asked why he donates platelets, CAPT Fellowes replied: "Because it's a simple procedure compared to the benefits it provides for patients who need blood transfusions. I get a lot of satisfaction out of giving blood because I know that it's being used to help others." His solution to the problem of maintaining adequate blood supplies is simple: "Give blood!" □

CDR Smith is assigned to the Blood Bank Branch, Laboratory Medicine Department, Naval Hospital, Bethesda, MD 20814-5011.

CAPT Fellowes at a recent plateletpheresis donation. The procedure is being performed by HM1 Nancy Romine, using a Fenwal Model CS3000 cell separator machine.



HM3 Louis E. Curtis

The Blood Bank at Bethesda Naval Hospital is equipped with two kinds of cell separator machines: Haemonetics Model 30 and Fenwal Model CS3000. The Haemonetics machine is a discontinuous-flow device and is manually operated. The Fenwal machine, on the other hand, is a continuous-flow instrument and is automatically controlled by computer. Both instruments have unique characteristics, and each one has its own particular set of clinical applications.

To meet daily demands for such specialized blood products, the hospital collects approximately 11,000 units of random-donor platelets and 600 units of single-donor platelets per year. Recruiting volunteer donors for plateletpheresis, however, is by far the most difficult task to accomplish. Plateletpheresis donors, because of their scarcity, constitute a very elite group of people.

Although the Blood Bank enjoys the support of several regular apheresis donors, none has surpassed the record set by CAPT John H. Fellowes (Ret.). Since June 1982 CAPT Fellowes has donated over 100 units of platelet con-

Halitosis

Diagnosis, Clinical Significance, Prevention, and Treatment

LT Paul J. Vankevich, DC, USNR

Halitosis, or bad breath, can be of considerable concern to patients, their social acquaintances, and dental and medical health professionals. The condition may be acute or chronic, and may have multifactorial etiologies, some of which may be of serious consequence.

Halitosis is a term with etymologic origin from the Latin word "halitus" (breath) and Greek suffix "osis" (a pathologic condition or process).⁽¹⁾ Synonyms which describe this human malady include ozostomia (Greek "ōze" or stench and "stoma" or mouth) and fetor oris (Latin "fetor" or stench and "oris" or mouth). The Latin phrase "fetor ex ore," meaning stench from or out of the mouth, is particularly appropriate. It is derived from the Roman custom of overeating, where it was quite acceptable for those attending the feast to adjourn to the vomitorium, regurgitate, and promptly return to the banquet.⁽²⁾

The historical and social significance of malodorous breath is interesting. In the era of the French Court, physicians prescribed enemas as a means of halitosis prevention, alleging that a bowel washout would sweeten one's breath. England's Queen Elizabeth I, who had very bad dentition, also had objectionable breath. Halitosis as a clinical entity was first described by the American dentist, Dr. Howe, in 1874. He stated that offensive breath derives its importance from the fact that it is a constant source of misery to all who, by force of circumstance, are compelled to associate with the unfortunate patient. It destroys the communion of friends and the pleasures of social contacts.⁽³⁾ In 1951 dental researcher Dr. Maury Massler recognized the importance of halitosis, stating that it is socially handicapping, can produce neurosis, and is a diagnostic aid.⁽⁴⁾

Regardless of what is said about halitosis, there is one certainty: halitosis is profitable. In 1969 the American public spent more than \$25 million to battle bad breath.⁽⁵⁾ There seems little doubt about the social significance of

mouth malodor. One need only watch television to see the substantial number of commercials recommending mouthrinses and topical agents that purport prevention of cure of this human affliction. The American dog food industry even advertises products which reduce canine halitosis in man's best friend.

People tend to avoid this unpleasant problem. Physicians seem particularly adept in avoiding halitosis by referring the hapless patient to a dentist. The condition may be the symptom of a serious disease which may originate locally or systemically. The etiologic factors may be intra-oral or extraoral, and they may be pathologic or non-pathologic.⁽⁶⁾ It is estimated that about one person in two has bad breath during the day, especially when hungry.⁽⁷⁾ As much as 90 percent of the causes of bad breath originate from the oral cavity.⁽⁸⁾

The principal malodorous components in bad breath are hydrogen sulfide and methylmercaptan.⁽⁹⁾ These substances comprise about 90 percent of the volatile sulfur compounds found in mouth air, and they arise from the bacterial degradation of disulfide-containing proteinaceous substances, derived primarily from mammalian cellular elements in saliva. Dimethyl sulfide and sulfur dioxide have also been detected.⁽¹⁰⁾ Hydrogen sulfide and methylmercaptan have been found to be olfactorily objectionable at levels of 1.5 and 0.5 ng per 10 ml.⁽¹¹⁾ Hydrogen sulfide is a toxic microbial metabolite and acute exposure to very low concentration in the air produces immediate and direct irritation of the respiratory and conjunctival tissues.⁽¹²⁾

A variety of methods have been employed to investigate and diagnose obnoxious breath. A subjective method using a so-called organoleptic jury (Greek "lepsis" or seizure) has been employed.⁽¹³⁾ A jury of investigators subjectively evaluates the character and intensity of mouth odor. An osmoscope (Greek "osme" or smell) was used in

earlier studies to assign numerical evaluations to breath samples. The device consists of a tube with a series of holes which allow air to dilute a subject's breath. The sample is transported from the mouth of the subject at one end of the tube to the nose of the investigator at the other. Depending upon the amount of sample dilution and the perceptivity of the odor by the investigator, a subject's breath is assigned a numerical value. The method is highly subjective.

More recent experimental studies on odors from breath, saliva, or saliva fractions have utilized mass spectrometers, titrologs, and gas chromatography.(14) The presence of odoriferous components from samples in these studies must be confirmed by organoleptic perception before a definitive diagnosis of halitosis may be made.(15) These methods provide an accurate means of determining the chemical content of offensive breath.

Foul breath may be emitted either orally or nasally and may arise from a variety of intraoral and extraoral tissues. The teeth and the oral mucosa may be affected by pathologic and physiologic conditions which generate malodorous substances. Dental caries may make significant contribution to foul halitus. The tongue may have a coating comprised of microflora, polymorphonuclear leukocytes and desquamated epithelial cells found on and between the filiform papillae. These substances are subject to putrefaction. Anatomic deviations such as tori (bony exostosis) and malposed teeth may facilitate plaque and food retention, which is subject to microbial degradation. Any morphologic condition compatible with salivary stagnation, such as the gingival sulcus or periodontal pockets, may permit the oral microbiota to produce putrid odors.

Extraorally, the nasopharyngeal structures may influence breath quality as noted in rhinitis, sinusitis, tonsillitis, and pharyngitis. Anatomic crypts on the tonsillar tissues may become impacted with food. Nasal foreign bodies have been observed to create halitosis in children.(16) Inflammation or pathosis of pulmonic structures such as an anaerobic lung infection may produce a frankly feculent breath.(17) Congenital bronchoesophageal fistula and pyloric stenosis are capable of producing halitosis.(18,19) During periods of hunger it has been suggested that pancreatic juices in the stomach may undergo putrefaction, potentially tainting the breath.(20) Normally the esophagus will not allow odors to pass from stomach to mouth; however, during deglutition, eructation, or regurgitation, gases may escape, influencing breath quality.

Human oral biology is quite complex and there are multiple parameters that influence halitosis etiology.

These include chemical, microbial, physiologic, pathologic, nutritional, and iatrogenic factors.

Chemical conditions of the oral environment vary according to salivary factors such as alkalinity, flow rate, and glucose content.(21) Slightly alkaline pH (7.2) favors mouth malodor production while slightly acid pH (6.5) has an opposite effect. Salivary stagnation results in a shift in the ratio of gram positive to gram negative filamentous organisms which are chiefly responsible for the production of intrinsic oral malodor. These smells result from the putrefaction of sulfur-containing proteinaceous substrates. However, when glucose is added to the salivary flora, malodor production is decreased. The presence of bacteria is essential for malodor production from salivary putrefaction. During sleep, salivary flow is essentially nonexistent, permitting uninterrupted microbial putrefaction and this may be exemplified by early morning breath samples.

It has been observed that mouth malodor is manifested in some women during the menstruation phase or certain periods of the reproductive cycle.(22) There exists distinct variations in the concentration of hydrogen sulfide, methylmercaptan, and dimethyl sulfide in mouth air during various stages of each cycle. A two- to four-fold increase in volatile sulfur compounds is noted 2 days before or 2 days after ovulation and menstruation. Changes of lesser amounts occur during the midproliferation and midluteal phase of each cycle. These changes concur with estrogen, progesterone, and luteinizing hormone fluctuations.

Oral pathological conditions may have malodorous manifestations. Inflamed, ulcerated, and necrotic tissue may undergo decomposition and putrefaction, which results in an increase in volatile sulfur compound production and an enhanced odor intensity. Gingivitis, periodontitis, pericoronitis, and fusospirochetal infections such as acute necrotizing ulcerative gingivitis (ANUG or Vincent's infection) are significant entities. In addition, dental caries, oral and oropharyngeal carcinoma, herpetic stomatitis, stomatitis medicamentosa, and erythema multiforme may produce bad breath. Fistulas and sinus tracts, as observed in a draining dentigerous cyst, may produce halitosis.(23)

A reduction in the quality or the quantity of saliva production results in xerostomia (dry mouth) and this may induce or enhance halitosis. There is a subsequent reduction of the natural cleansing of the oral cavity which promotes microbial activity. Systemic administration of pharmacologic agents such as antihistamines, diuretics,

tranquilizers, antineoplastic drugs, and atropine-like substances can produce xerostomia. Other conditions adversely affecting salivation include mouth breathing, heavy smoking, radiotherapy exceeding 800 rads, diabetes, menopause, aging, and Sjögren's syndrome.(24)

Fixed and removable dental prosthesis, tooth restorations, and factitious and iatrogenic damages may contribute to offensive breath. Defective restorations, rough and unpolished tooth surfaces, and open interproximal dental contacts may allow food impaction and plaque accumulation. Incorrect laboratory processing and inappropriate patient handling (allowing the denture to dry out or soaking it in bleach) lead to denture acrylic porosities with resultant microbial plaque adhesion.(25) Proper oral hygiene of both hard and soft tissues is often inadequate or neglected and this can produce significant contribution to malodorous breath. Patients may overuse hydrogen peroxide as an oral irrigant causing an odorogenic, black hairy tongue. Smokeless tobacco placed into the mucolabial vestibule can obnoxiously taint the user's breath.

Odors arising from systemic pathological conditions are contributory and can be the dominant extraoral cause of halitosis. These odors are intense and persistent and can be pathognomonic of specific disorders. An acetone-like, sweet, fruity breath may indicate diabetic acidosis or impending hyperglycemic coma.(26) A urine or ammoniacal breath may signal uremia or renal failure. Patients with hepatic failure may develop a fishy, mousy, musty breath odor called fetor hepaticus, while cirrhosis patients will have breath resembling decayed blood. Acute rheumatic fever may cause breath with an odor of acid sweat, and dysmenorrhea may produce a mousy odor similar to a decayed blood clot. A lung abscess or bronchiectasis is characterized by a foul breath resembling rotting meat.

Diet can profoundly affect the status of an individual's breath. Alcohol, garlic, onion, and aromatic, spicy foods absorbed from the small intestine are carried by blood to the pulmonary alveoli where they taint the breath. Overconsumption of fatty meats and dairy products may defile the breath with pungent metabolites.

Pharmacologic agents may affect the breath either directly by being released in expiration, such as ethanol, or indirectly by reducing salivary flow, such as an antisialagogue. Beverage alcohol, once absorbed into the blood, is vaporized immediately in the pulmonic structures and the acetaldehyde produced by metabolic degradation may be present for many hours postconsumption. Certain antibiotics may alter the normal oral flora by allowing proliferation of gram negative filamentous anaerobes, specifically implied in halitosis etiology.

Halitosis may also result from the antiangina pectoris drug isosorbide dinitrate and from chloral hydrate, phenothiazide, and amyl nitrate. Antineoplastic agents such as adriamycin may create mouth malodor due to decomposition of blood from gingival hemorrhage, dehydration, or chemotherapeutic stomatitis. Tobacco products provide a

source of nicotine through cigarette, cigar, and pipe smoking, or by chewing or "dipping." These substances may make significant contribution to offensive breath.

Certain chemical agents can be absorbed through the skin, affecting the breath. It has been proven that garlic rubbed on the soles of the feet can be noticed on the breath 2 hours later, and it may remain for up to 24 hours. Dimethyl sulfoxide (DMSO), a potent industrial solvent, has been used to treat muscle pain, gout, and arthritis by dermal application. This colorless and odorless liquid is readily absorbed transdermally, and is rapidly metabolized and reduced to dimethyl sulfide, a chemical cousin of allicin, the chemical essence of garlic. A garlic taste is observed within minutes, and the patient's skin and lungs produce a garlic odor which may last for days.(27)

Specific age groups may present with a characteristic mouth odor. Children ages 2-5 may have tonsillar crypts which may lodge food and bacteria, producing a sweet, fetid mouth odor. During times of stress, teenagers may present with Vincent's disease, a condition of necrotizing ulcerative gingivitis having horrific halitosis. Early morning halitosis may be more severe in middle-aged men and women, due perhaps to the increased incidence of periodontal pathosis in this group. The geriatric individual may be predisposed to halitosis due to xerostomia, periodontal problems, unclean dentures, and multiple medications.

Halitosis should be considered as a sign or symptom and not as a disease. The clinical significance of mouth odor lies primarily in its use as a diagnostic aid. With some patients, both dentist and physician should consult each other. Modern medicine does not always regard bad breath as a safe and reliable method of diagnosis; hence it is often disregarded and not given the appropriate diagnostic recognition.

The effect of chronic halitosis on an individual may be far-reaching socially and psychologically. Halitosis may be objective, perceived by social acquaintances, or subjective, perceived only by the patient. Taste distortions appear to play a significant role in the development of referential thinking about bad breath.(28) The patient may suspect that their breath smells, because it tastes so bad to them, and have passionate complaints of nonverifiable or delusional halitosis.

Efforts to eliminate fetor oris should be directed toward determining its cause and correcting its etiology. Use of a mouthwash is palliative and transient and does not eliminate all odors. Excessive use of alcohol-containing mouthrinses may create oral mucosal irritation.(29) Odorogenic gram negative bacteria inhabiting the gingival crevice are decreased *in situ* after rinsing the mouth with an antiseptic mouthwash.(30) But this effect is transitory, and a diluted solution of hydrogen peroxide will promote similar results. Antibiotics have had limited success. Zinc-containing mouthwashes exhibit a pronounced inhibitory effect lasting for at least 10 hours, reducing the sulfur content of early morning mouth air by 75 percent.(31)

If an underlying pathology is the cause of chronic halitosis, then elimination of the disease will relieve the bad breath. If foods are etiologically implied, then diet modification may aid in reducing offensive odors. Scrupulous oral hygiene including toothbrushing, flossing, and brushing the dorsoposterior surface of the tongue will reduce intraoral bacterial putrefaction. Use of a toothbrush or oral irrigating device may aid in cleaning tonsillar crypts. Proper care of dental prosthesis is imperative. If mouth breathing is the cause, then surgical correction of the nasal obstruction or orthognathic surgery and occlusal rehabilitation may help to eliminate foul breath. If uncorrected, these patients should avoid sleeping on their back. Tobacco and alcohol habits should be modified or eliminated in any antihalitosis therapy. Patients using drugs having antisialagogue properties may have their usage altered. If the cause can be detected and eliminated, then malodorous mouth odor can be eradicated.

Thus, acute and chronic halitosis may have multiple etiologies, and the condition, which may or may not be of concern to the patient, should have its significance underscored by the dental or medical profession. Regardless of what may be said of halitosis, a few words may be of comfort to the unfortunate patient whose condition is not amenable to ordinary therapeutic intervention. It is perhaps better to have halitosis than have no breath at all.

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Antabuse and Optic Neuritis:

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In July 1986 a single, 26-year-old Caucasian male, petty officer second class presented to the Psychiatry Department at Naval Hospital, Naples, Italy. During the preceding year he had experienced several alcohol-related blackouts, increasing tolerance, and a series of alcohol-related incidents. On his own, he quit drinking. After evaluation by the ship's medical officer, he was placed on Antabuse, 250 mg, PO/qd. He developed visual problems and was initially felt to be malingering. Because of concerns by the ship's physician, he was given a consultation and referred to psychiatry for further evaluation.

Significant history revealed that he had been in the Navy for 8 years. He worked as a cook in the MS rating, liked his work and ship, and had above average evals. The patient vehemently denied any current or past illicit drug use and there was no evidence to the contrary. He had had no disciplinary problems during his military service and was career-oriented. He was a moderate smoker. A review of his medical record revealed no prior hospitalizations, no known allergies or drug sensitivities, and that he had been placed on Antabuse 3 weeks prior to being referred to psychiatry. He had no history of psychiatric evaluations or consultations. A review of his work record provided nothing that would lead one to suspect exposure to toxic occupational substances.

Psychiatric Evaluation

The patient presented as somewhat overweight and was appropriately groomed. He was alert, oriented in all spheres, and his recent and remote memory was intact. Speech was clear and no defects were noted. Affect was appropriate. Mood was one of unconcern. Indeed, he did not volunteer the visual difficulties until he was asked. He showed an air of indifference to the visual problems not unlike the classic histrionic "la belle indifference." His appetite was good; he had no weight change recently, sleep patterns were good, and libido was undiminished. In-

telligence was estimated to be within normal limits. Sensorium was clear and not clouded. There was no evidence of illusions, delusions, hallucinations, or other primary or secondary signs of a thought disorder. Insight was adequate. Judgment, by history, was good in all areas except when he was drinking. Again, he had ceased his use of alcohol on his own. There were no overt signs of past or present aggressive, suicidal, or homicidal ideation.

Because of the visual disorder that had appeared shortly after beginning Antabuse, and because of expression concerns of malingering, the patient was referred for a concurrent ophthalmologic examination.

Ophthalmologic Examination

Examination by the ophthalmologist noted that the patient had reported to medical with a complaint of sudden onset of central visual loss in his right eye that was of approximately 5 day's duration. Past medical history was unremarkable. The patient was noted to be taking Antabuse, 250 mg, PO/qd, but was taking no other medications.

On physical exam, the visual acuity was "count fingers" in the right eye, and 20/20 in the left eye. The pupils were 2+ reactive in the right eye and 3+ reactive in the left eye. The right eye had a 2+ Marcus-Gunn pupil (swinging flashlight test). The right eye demonstrated a dense central scotoma on visual field testing. The remainder of the complete eye examination was normal. A general neurologic evaluation was also normal.

In evaluating this case from an ophthalmological standpoint, the differential diagnosis centered between idiopathic optic neuritis versus toxic neuritis versus nutritional deficiency. As the patient's diet was adequate by history, the problem was presumed to be idiopathic or toxic, possibly secondary to Antabuse.

After being evaluated, the treatment course chosen included discontinuation of Antabuse. The patient was

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placed on prenatal vitamins, 1 PO/qd, with a supplement of 100 mg thiamine and 50 micrograms of B₁₂ PO per day. After being placed on this medication the patient's regime was followed in the local medical holding unit. Within 3 days, his vision had improved enough to read 20/40 with his right eye, and his vision was completely restored within 10 days. He was returned to the ship with a summary note to the medical officer. The medical record was also flagged for possible allergy to Antabuse.

Ophthalmology Comment

Recovery time was far too short for the usual course of idiopathic optic neuritis, which may last for many weeks to months. If one could assume an adequate diet (almost certainly true), this case has a high probability of being toxic amblyopia, secondary to Antabuse. The *only* way to secure a definitive diagnosis was to place the patient again on Antabuse and see if symptoms returned. While this has been reported in the literature, it was not done in this case for obvious reasons. The original diagnosis was further confused by the unusual affect the patient exhibited, both in psychiatry and in ophthalmology. His lack of concern about the visual loss could have easily caused the clinician to dismiss the case as malingering or a histrionic reaction. It is important to note that it is impossible to fake a Marcus-Gunn pupil. It is also interesting to note that his reaction was unilateral. All the other reported cases in an extensive review of the literature described bilateral reactions.

Antabuse and Optic Neuritis

One of the most widely used chemical adjuncts in the treatment of chronic alcoholism has been disulfiram (Antabuse). Originally, this chemical was used in the rubber industry as an anti-oxidant. It has been found to be useful as a disinfectant and fungicide as well. The drug is white, odorless, and almost tasteless. It forms chemical

complexes with certain metals. While disulfiram is absorbed from the human gastrointestinal tract quickly, about 12 hours is required for it to reach full activity. Its elimination is relatively slow, with about 20 percent remaining in the body at the end of 1 week. Most of the drug is oxidized chiefly in the liver; then it is excreted as the sulfate, partly free and partly esterified. (1-3)

Although reactions to the drug have been documented, disulfiram taken by itself is considered relatively nontoxic. The drug markedly alters the metabolism of ethyl alcohol, and this effect brings on signs and symptoms of the acetaldehyde syndrome. This syndrome consists of an intense vasodilation over the entire body, respiratory difficulties, nausea, vomiting, chest pain, blurred vision, confusion, and hypotension. The blood pressure may fall to shock level. In individuals sensitive to disulfiram, the symptoms may occur when it is taken with as little as 7 ml of ethyl alcohol. Once the effect is elicited, it may last anywhere from 30 minutes to several hours. (1,3)

The ocular effects induced by disulfiram have been extensively documented in the French literature. (4-9) These patients failed to respond to a vitamin-supplemented, nutritious diet, and yet their neuritis improved when the drug was withdrawn. In one case, Humblet reported that symptoms returned when the drug was reinstituted and the patient's condition improved again when the drug was withdrawn for a second time. (6)

The possibility of optic neuritis should be kept in mind when persons taking disulfiram complain of decreased visual acuity, although no changes in the optic disc are as yet apparent.

Norton and Walsh (1) described a 60-year-old man with bilateral 20/20 vision who, one year earlier, had stopped his high alcohol intake and started to take 500 mg disulfiram per day. Six months later, still taking the drug, he complained of blurred vision in both eyes. His diet was nutritionally adequate. Examination revealed a right disc

with a slight temporal pallor upon fundoscopic examination and the left disc was uniformly pale. Examination showed a scotoma in the central macular area. Visual acuity in the right eye was 20/50-1; in the left it was 20/50. The patient was advised to stop taking disulfiram. One month later his visual acuity had increased to 20/30 in the right eye and 20/20-3 in the left eye. The macular scotoma remained. Three months later the visual acuity in the right eye was 20/30+3; in the left eye, 20/20-3. There was no change upon fundoscopic examination. Visual field examination showed the scotoma had disappeared from the left eye, but a reduced paracentral defect remained in the right eye.

Two other American ophthalmologists, Hoyt in San Francisco and Worthen of the VA hospital in Gainesville, FL, have reported seeing similar cases. Dr. Worthen reported one case where the patient's vision improved when the drug was withdrawn. The patient's wife insisted that the drug be reinstituted, and the poor vision and central field defect returned.⁽¹⁰⁾

Graveleau, et. al.,⁽⁹⁾ similarly report a case in a 28-year-old woman who began treatment with disulfiram 1 g/day. She experienced a confusional attack with hallucinations associated with moderate motor deficiency of the lower limbs. A later temporary increase in disulfiram to 1.75 g/day was followed by quadriplegia and paralysis of the facial and glossopharyngeal nerves. In addition, she exhibited optic neuritis. The optic neuritis cleared rapidly with cessation of the drug, as did the paralysis of the cranial and upper limb areas. The paralysis cleared much slower in the lower limbs.

The mechanism of the toxic effect of disulfiram on the optic nerve can only be speculated upon. Whether it is a manifestation of the accumulation of the products produced by the enzyme blockage, or whether it is a direct effect of the drug still must be determined. It is of interest, notes Norton and Walsh in their article, that earlier studies showed that intravenous injections of acetaldehyde in normal persons produced typical traumatic signs and symptoms of alcohol ingestion which occur when a patient is receiving disulfiram.^(1,11)

Little is written about the incidence of the optic neuritis to the drug disulfiram. Lipman cites the incidence as an "uncommon occurrence."⁽¹²⁾ The *PDR* merely lists *optic neuritis* as one of the *adverse reactions* that is possible with the drug. It does not list the incidence of such reactions.

In most cases of optic neuritis occurring while a patient was receiving disulfiram, recovery of vision was usually complete within a few weeks after discontinuance of the drug. This includes patients who continued their usual rate of tobacco smoking. In a few exceptional cases, some slight impairment of vision persisted associated with some pallor of the optic disc. It is also worthy of note that a variety of peripheral neuropathies have been ascribed to disulfiram and may accompany the retrobulbar neuritis.

Discussion

There are three important points this case serves to illustrate.

First, the term *malinger* should be used only after every effort has been made to show the definitive gain of such *malinger*. Often this involves being discharged from the Navy, being reassigned to shore duty, or being assigned to another duty station. This particular patient liked his job and his ship. Also, evaluation should be made by the appropriate specialist whenever possible. In this case, no secondary gain could be identified, and evaluation by both the psychiatry and ophthalmology departments provided a diagnosis of a probable toxic reaction to a prescribed drug.

Secondly, every exam should include a *thorough* history which includes the question of *other* medical problems the patient may fail to mention to the evaluating clinician. A surprising number do not "bother" to mention accompanying, and unrelated (unrelated, that is, to the patient) medical problems.

Thirdly, with the increased use of the drug disulfiram to aid in treatment of alcohol problems, there is the concomitant rise in the possibility of misdiagnosing alcoholics who are placed on Antabuse and develop optic neuritis. This problem should be suspect, particularly in disulfiram users who do not respond to a nutritionally adequate diet after developing optic neuritis.

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To the Editor

The following is an exchange of correspondence concerning the article "Don't Shoot at the Orange Cross" by COL James H. Jeffries III, USMCR, published in the March-April issue of Navy Medicine.

Dear COL Jeffries:

I read with interest your recent article in *Navy Medicine* entitled "Don't Shoot at the Orange Cross." Although I am sure you are legally correct, the last two "conflicts" have taught us that proudly displaying a medical symbol—regardless of color—was a good way to get killed. In Vietnam, corpsmen not only discarded their red crosses, but also learned, in order to improve their own mortality statistics, to hide their medical gear in the packs of their company nonmedical members. Those of us who may someday find ourselves aboard *Mercy* or *Comfort* within a war zone would be just as happy to have those bright red targets removed from the ships' hulls. It may be my husband's USMC persuasion, or the 2 years I spent as a general medical officer on USMC bases, but I've always been partial to the color "camouflage" myself!

LCDR Lee Heib, MC, USNR
Coronado, CA

Dear Dr. Heib:

My comments were not in support of (or against) the use of the distinctive emblem in combat, but rather to point out that if the symbol is to be used, the correct one should be used.

You also raise a couple of other good points. The Geneva Conventions of 1949 do not *require* the use of the distinctive emblem, but rather permit its use, subject to the judgment of the commander. It has long been the unwritten policy of the Marine Corps (and our attached naval medical personnel) to do just as you remark and rely on camouflage discipline and our own defensive capabilities in tactical operations ashore rather than trusting our opponents to observe the niceties of the law of war. This might no doubt be different in a large-scale conventional war with fixed lines and rear areas well removed from the front, but we haven't seen one of those in a while, and I doubt that in even that unlikely circumstance battalion or regimental level operations would be conducive to use of the red cross. When we forego use of the protective emblem we do, of

course, lose any theoretical protection it might have afforded our medical personnel.

The Army's policy is essentially the same as ours although they have put it in writing (in an Army Regulation) and fudged a little bit about who has the authority to make the decision to refrain from using the emblem. In Vietnam the Army tried various schemes for their dedicated medevac UH-1E helicopters. Initially they used green or camouflaged choppers with white blocks and red crosses. For a time they tried completely white planes with red crosses, which proved to be even better targets. They then went for a time to entirely camouflaged planes with black crosses! All of this was exercise in futility, legally at least and leaving aside the absurdity of the suggestion that the Viet Cong and the NVA would observe the law of war, because medical aircraft occupy a special category in the law governing medical transport. They are only protected when the opponents have reached specific local agreements as to times, places, routes, altitudes, etc. Unfortunately, it was seldom possible in Vietnam to ring up Charlie and arrange for a dustoff.

I disagree with your notion about not marking hospital ships, however. The last time a hospital ship was attacked to my knowledge was during World War I, and that was done deliberately by the Germans as an arguably legal reprisal against the perceived misuse of their hospital ships by the British. (Reprisals against medical targets are no longer lawful.) Otherwise the record on hospital ships has been very good, including as recently as the Falklands affair where the Brits and the Argentinians established a hospital ship safety zone and cooperated closely with each other and with the International Committee of the Red Cross. The real threat to hospital ships in today's sea warfare is not the possibility of intentional attack but the employment of over-the-horizon weaponry which cannot distinguish one ship from another. The Argentine Exocet missile which sank the *Atlantic Conveyor* during the Falklands War would have locked onto a hospital ship just as readily if that had been the first hull its targeting system acquired.

COL James H. Jeffries III, USMCR

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